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SUBJECT The Kasptanker Shipping Line
Diesel-Electric ship, the GENERAL AZI ASLANOV

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1. In the "Vodnyy Transport" gazette frequent mention is made of the tanker "General Azi Aslanov," belonging to the "Kasptanker" Shipping Line. It is mentioned as being one of the most modern tankers of the line.
2. [redacted] this Diesel-electric ship is a new vessel and the only Diesel-electric ship in the "Kasptanker" Shipping Line. [redacted]
3. This 9500-ton tanker was laid up for outfitting at the Zhdanov Transport Machine Construction plant in Sormovo but construction was not even finished when World War II broke out. It was held up for quite a long time. The tanker, indeed, had quite a history. Construction was begun long before World War II. Originally it was intended to build the tanker on the model of the large tonnage tankers "TSYURUPA", "ZHDANOV", "LENIN," etc, which had been built at this plant for the Kasptanker Line. Since the power plants of the tankers in operation proved unsatisfactory, (cumbersome compressor Diesel engines as power plants), design and installation of a better power plant for this vessel was ordered. Whether the Sormovo plant designers were not able to carry out this job or whether they could not find a suitable power plant (most probably the latter, at any rate, the question of installing a more modern power plant in this tanker came up only after the ship hull had been built), at any rate the ship was not built. What is strange, however, is that after the hull was put together in a slap-dash fashion the vessel was put to use transporting petroleum products as a non-self-propelled vessel (lighter).

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4. The vessel was in operation in the "Kasptanker" Shipping Line as a non-self-propelled lighter until the beginning of 1948. In spring 1948, funds were allocated for construction of the tanker and the hull was ordered towed to the Sormovo plant docks. Since the Volga and Northern Caspian Sea were then only starting to become ice free, the ship's hull was moved from Baku to Astrakhan and from there one of the "Reydtanker" Roadstead Shipping Line tugboats towed it to the Sormovo plant site (approximately in May 1948).
5. In 1948, designers of the Sormovo plant in collaboration with designers of the former Merchant Fleet Ministry designed and submitted plans for a new tanker propulsion unit. According to the project, the tanker was to be equipped with a Diesel-electric propulsion unit instead of, as projected originally, a Diesel unit of the type used on tankers of the "SYURUPA" series.
6. A tanker Diesel-electric propulsion unit is a Diesel-electric engine consisting of four main Diesel generators which provide the current for two electro-propeller engines and which in turn cause the tanker's propellers to rotate.
7. Standard Diesel generators which are standard equipment on main-line railroad motor locomotives were used as main Diesel generators on tankers. They are engines of the "D-50" type, which usually have 1,000 effective HP with 740 revolutions per minute. Since the middle of the 20th century, the efficiency of power utilization of maritime ship engines represents 0.95-1.0 against 0.7-0.75 for locomotives, the "D-50" engines were made to render a slightly lower capacity on the tanker, that is, the capacity of each engine installed on the tanker consists of 900 effective HP with 720 revolutions per minute. The "D-50" engine is a six-cylinder, four-tact engine without compressor; simple action with supercharger. The cylinder diameter of the Diesel engine is 318 mm, piston stroke 300 mm. The pistons are made of aluminum alloy and do not have artificial cooling. Diesel supercharge is accomplished by a special blower which forces air into the cylinders and which is set into rotation by a gas turbine which operates by using the engine exhaust gases. The rotor of the blower can make up to 13,500 revolutions per minute and provide up to 10,000-13,500 cubic meters of air per hour.
8. The engine is cooled with fresh distilled water. The cooling system is fully circulatory. The engine has pressure lubrication. When pressure of lubricant falls below 1.6 kilogram per square centimeter the engine stops automatically. The engine has a safety regulator which stops the Diesel by means of a fuel pump if revolutions of the Diesel exceed normal revolutions by 10-15%, ie, 850 revolutions per minute.
9. The electric power station of the Diesel-electric ship consists of four (rotated by "D-50" engines) continuous current generators each putting out 700 KW, 700 Volt, designed to feed ship propeller unit electro-motors, but also electro-motors of loading pumps. The generators form a common unit with the Diesel (not counting the couplings). Four auxiliary generators of 70 KW each, 230 Volt, which feed auxiliary equipment when ship is in motion, are connected with the free ends of main generator shafts.
10. When the vessel is stopped with no loading operations in process or while cargo is being fed to the tanker by shore-based pumps, feeding of auxiliary equipment is done by the auxiliary Diesel generator
11. The propeller engines of the vessel are double-action, ie, they have two armatures and two magnetic systems in one housing. Engine power is 1750 HP each, Voltage 700 Volts, 128 revolutions per minute. These engines, formerly serial engines of continuous current used in rolling mills in the metallurgical industry, were converted into marine engines.

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12. The vessel has two centrifugal loading pumps which can handle 1500 tons of cargo per hour. The pump electro-motors are fed from the main ship generators, which produce 440 Volt. Capacity of the electro-motors is 142 KW each.
13. The following work schedules for Diesel-electro ship main generators are provided by the scheme:
 - (a) Four generators in pairs work on the electro-motors on each side,
 - (b) Two generators singly work each of them on the electro-engine on its own side,
 - (c) One or two generators work on the electro-engine and the generator on the other side of the ship works on two loading pumps,
 - (d) A generator works on two loading pumps.
14. Control of the tanker's propeller unit (generators, electro-motors, shaft, propeller) is maintained by the control panel in the engine room.
15. Equipping the tanker with a Diesel-electric unit instead of a Diesel unit alone as in the serial-type Caspian tankers, allowed for reducing the dimensions and the entire mechanical gear of the vessel's engine room. The weight of the basic machinery of the Diesel-electric ship comes to about 180 tons while the weight of basic machinery of the one-type motor vessel comes to about 500 tons. The weight of the main Diesel generator of the Diesel-electric ship is about 22 tons in comparison to the weight of the main engine of the single-type motor vessel, which is about 200 tons.
16. The nominal speed of the ship with all four Diesel generators operating is 11.3 knots. With three generators working (in case one of them should be in repair while ship is in motion), the speed is 9.8 knots, i.e., at the most 13% below nominal speed.
17. Finally, the new installation on the tanker is an advantage insofar as the yearly demurrage for repair does not exceed six to seven days in comparison to 60-75 days for single-type Diesel tankers.

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- Enclosure (A): Sketch of the engine room of the Diesel-electric tanker "GENERAL AZI ASLANOV" with legend.
- Enclosure (B): Sketch of the engine room of the standard-type tanker "TSYURUPA," "ZHDANOV," etc, with legend.

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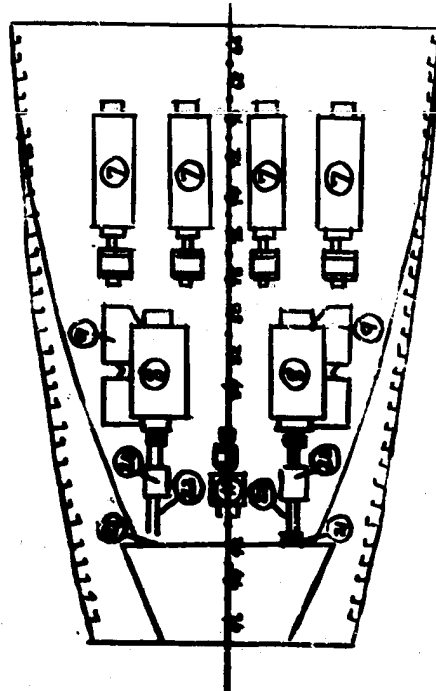
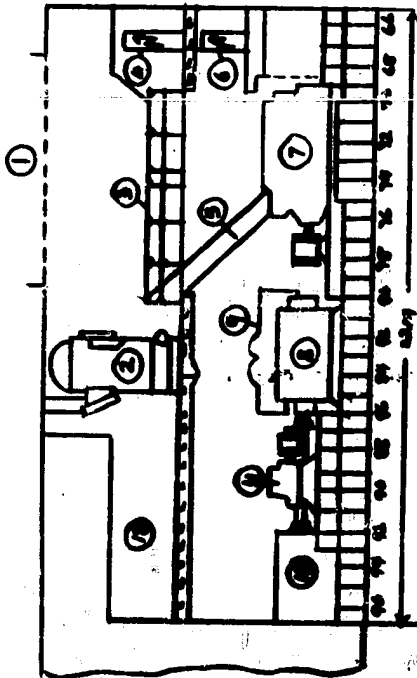
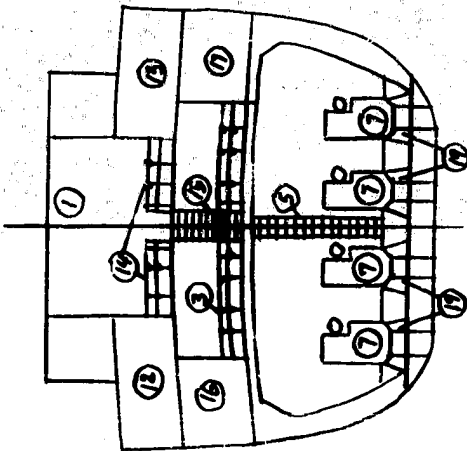
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ENCLOSURE (A)

Plan of engine-room of Diesel-electric ship

"GENERAL AZI ASLANOV"

Sistership of Diesel tankers, type "TSYURUPA," "ZHDANOV," etc.



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ENCLOSURE (A)

EXPLANATIONS

1. Engine pit
 2. Utility boiler
 3. Hand rails around upper gratings of engine room
 4. Electro-motive control panel
 5. Ladder within engine room
 6. Main switch board
 7. Main "D-50" Diesel generators
 8. Propeller electro-motors
 9. Air cooling system
 10. Propeller shaft tunnel
 11. Auxiliary Diesel generator
 12. Quarters for engine room crew
 13. Quarters for deck crew
 14. Hand rails confining upper level of engine room
 15. Ladder leading to upper grating of engine room and upper level
 16. Electro-mechanical machine shop and radio station supply room
 17. Engine supply room (storage of spare parts)
 18. Ship mechanical machine shop
 19. Main Diesel generator foundations
 20. Thrust bearings
 21. Packed stuffing boxes in watertight bulkhead which separates the engine room from the propeller shaft tunnel
 22. Intermediate shaft
- Nos 66 to 96 designate the frame of the vessel

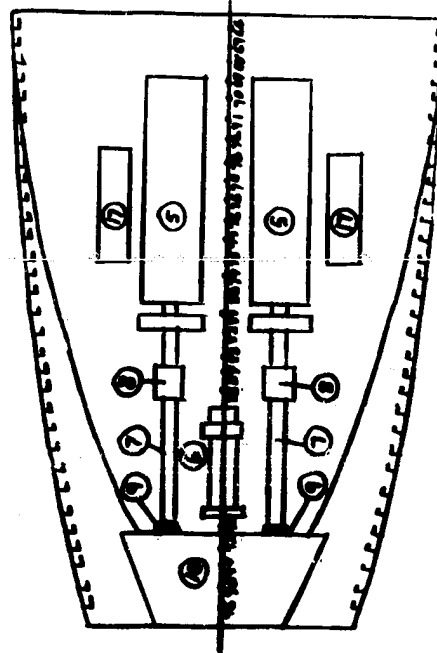
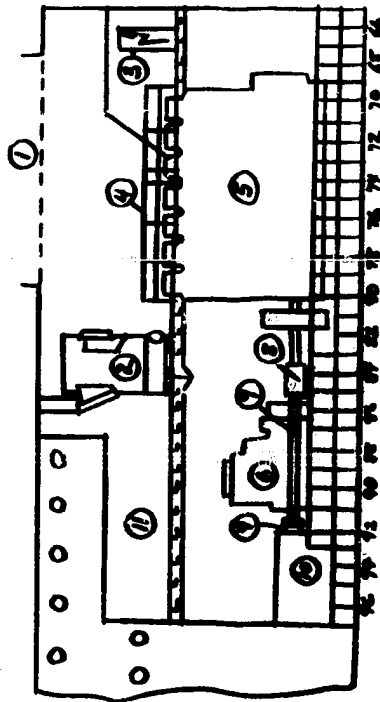
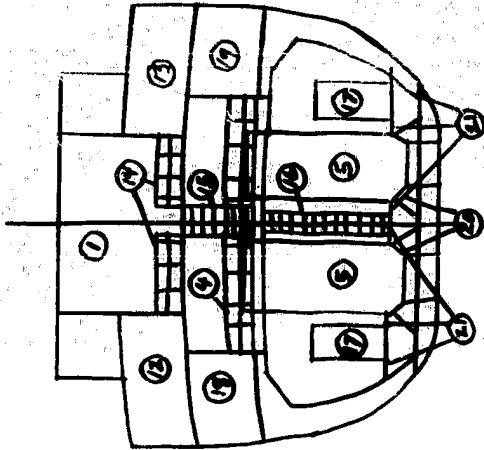
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ENCLOSURE (B)

Engine Room Plan
of the
Diesel tankers type "TSYURUPA," ZHDANOV," etc.



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ENCLOSURE (B)

EXPLANATIONS

1. Engine pit
 2. Utility boiler
 3. Main switch board
 4. Hand rails surrounding upper gratings of engine room
 5. Main Engines "K6TS-54/90 (compressor-engines, six cylinder, two-tact, single-action, cylinder diameter 540 mm, piston stroke 900 mm, capacity of each engine 1400 HP and 120 revolutions per minute)
 6. Auxiliary Diesel generator "3-BK-30" (three-cylinder, without compressor, cylinder diameter 300 mm).
 7. Intermediate shafts
 8. Thrust bearings
 9. Packed stuffing boxes in watertight bulkhead, separating the engine room from propeller shaft and outer (water-filled) tunnel
 10. Propeller shaft tunnel
 11. Ship mechanical machine shop depot
 12. Quarters for engine room crew
 13. Quarters for deck crew
 14. Hand rails confining upper level of engine room
 15. Ladder leading to upper grating of engine room with upper level of engine room
 16. Ladder within engine room
 17. Diesel generators "3-BK-43" three-cylinders, without compressor, cylinder diameter 430 mm. "BK" ship engines are called "little bulls" (BYCHKI).
 18. Electro-mechanical machine shop and ship radio station supply depot
 19. Engine material depot (spare parts depot)
 20. Main engine foundations
 21. Catwalk
- Nos 66 to 96 designate the frame of the vessel

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